

FCC

EMC

TEST REPORT

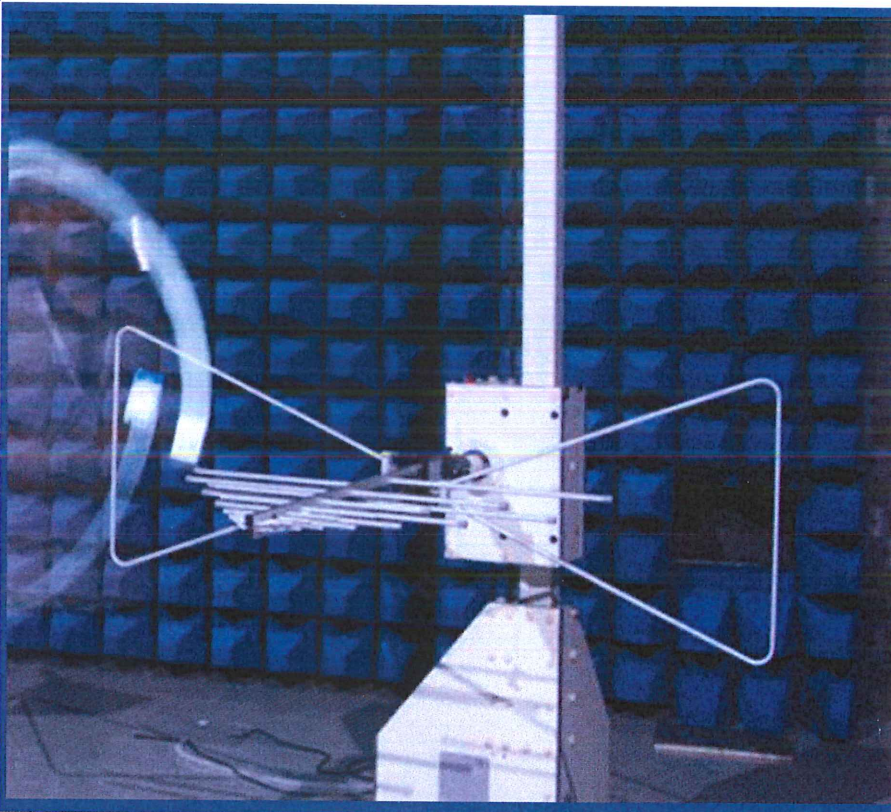
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
Mobile Phone

ISSUED TO
Guangdong OPPO Mobile Telecommunications Corp., Ltd.

NO.18 HaiBin Road, Wusha village, Chang An Town, DongGuan City,
Guangdong, China



Tested by: Xia Long
Xia Long
Date: May 09, 2020

Approved by: Wei Yanquan
Wei Yanquan
(Chief Engineer)

Date: May 09, 2020

Report No.: BL-SZ2030337-401

EUT Name: Mobile Phone

Model Name: AP001OP

Brand Name: OPPO

Test Standard: 47 CFR Part 15 Subpart B

FCC ID: R9C-A001OP

Test Conclusion: Pass

Test Date: Mar. 17, 2020 ~ Mar. 27, 2020

Date of Issue: May 09, 2020

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Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>May 09, 2020</u>	<u>Initial Issue</u>

TABLE OF CONTENTS

1	GENERAL INFORMATION	4
1.1	Identification of the Testing Laboratory	4
1.2	Identification of the Responsible Testing Location	4
1.3	Laboratory Condition	4
1.4	Announce	5
2	PRODUCT INFORMATION	6
2.1	Applicant Information	6
2.2	Manufacturer Information	6
2.3	Factory Information	6
2.4	General Description for Equipment under Test (EUT)	6
2.5	Ancillary Equipment	7
2.6	Technical Information	8
3	SUMMARY OF TEST RESULTS	9
3.1	Test Standards	9
3.2	Verdict	9
3.3	Test Uncertainty	9
4	GENERAL TEST CONFIGURATIONS	10
4.1	Test Environments	10
4.2	Test Equipment List	10
4.3	Test Enclosure list	12
4.4	Test Configurations	13
4.5	Test Setups	15
4.6	Test Conditions	17
5	TEST ITEMS	18
5.1	Emission Tests	18
ANNEX A	TEST RESULTS	20

A.1	Radiated Emission	20
A.2	Conducted Emission	29
ANNEX B	TEST SETUP PHOTOS	33
ANNEX C	EUT EXTERNAL PHOTOS	33
ANNEX D	EUT INTERNAL PHOTOS	33

1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation(A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20°C to 25°C
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

- (1) The test report refer to the BALUN report mode v6.8.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (7) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City, Guangdong, China

2.2 Manufacturer Information

Manufacturer	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City, Guangdong, China

2.3 Factory Information

N/A	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City, Guangdong, China

2.4 General Description for Equipment under Test (EUT)

EUT Name	Mobile Phone
Model Name Under Test	AP001OP
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	11
Software Version	ColorOS V7
Dimensions (Approx.)	159.4x72.4x7.7mm
Weight (Approx.)	171g(with battery)

2.5 Ancillary Equipment

Ancillary Equipment 1	Li-Polymer Battery 1	
	Brand Name	OPPO
	Model No.	BLP755
	Serial No.	N/A
	Capacitance	Rated: 3935mAh/15.22Wh Typical: 4025mAh/15.57Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	NAVITASYS TECHNOLOGY LIMITED
Ancillary Equipment 2	Power Supply Unit	
	Brand Name	OPPO
	Model No.	VC56JAJH
	Serial No.	N/A
	Rated Input	100-240VAC 50-60Hz 1.2A
	Rated Output	5.0VDC 2A or 5.0VDC 6A Max (US Plug)
Ancillary Equipment 3	USB Cable	
	Model No.	DL143
	Length (Approx.)	1.0 m
Ancillary Equipment 4	Headset	
	Model No.	MH147
	Length (Approx.)	1.2 m
Note: Letter in () means plug type.		

2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EDGE 850/900/1800/1900MHz 3G Network WCDMA/HSDPA/HSUPA/HSPA+/DC-HSDPA Band 1/2/4/5/6/8/19 4G Network FDD LTE Band 1/2/3/4/5/7/8/12/17/18/19/26/28 TDD LTE Band 38/39/40/41/42 LTE CA Uplink (UL): 7C LTE CA Downlink (DL): 7B, 7C, 38C, 41C, 7A-7A, 7A-28A, 28A-38A, 2A-5A, 2A-28A, 4A-5A, 4A-7A, 4A-28A, 5A- 7A, 4A-4A, 5A-38A, 7B-28A, 7C-28A, 4A-7C, 5A-7C Bluetooth 5.0 (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20) 5G WIFI 802.11a, 802.11n(HT20/40) and 802.11ac(VHT20/40/80) Band 1/2/3/4 SRD NFC, GPS, GLONASS, BDS, Galileo
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3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-18 Edition)	Unintentional Radiators
2	ANSI C63.4-2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low- Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

3.2 Verdict

No.	Description	FCC Rule	Test Verdict	Result
1	Radiated Emission	15.109	Pass	Annex A .1
2	Conducted Emission, AC Ports	15.107	Pass	Annex A .2

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions (9 kHz-30 MHz)	2.96 dB
Radiated emissions (30 MHz-1 GHz)	3.66 dB
Radiated emissions (1 GHz-18 GHz)	5.57 dB
Radiated emissions (18 GHz-40 GHz)	6.12 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

Environment Parameter	Selected Values During Tests			
	Temperature	Voltage	Relative Humidity	Ambient Pressure
Normal Temperature, Normal Voltage (NTNV)	23°C to 25°C	AC 120 V/60 Hz or AC 240 V/50 Hz or DC 3.87 V from Battery	50% to 55%	100 kPa to 102 kPa

4.2 Test Equipment List

Radiated Emission Test For Frequency Below 1 GHz (10 m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2019.07.04	2020.07.03	☐
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9168	9168-0883	2018.05.11	2020.05.10	☐
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	N/A	2018.08.08	2021.08.07	☐
Test Software	BALUN	BL410_E	V19.918	--	--	☐

Radiated Emission Test For Frequency Below 1 GHz (3 m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2019.10.29	2020.10.28	☒
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2018.08.22	2020.08.21	☒
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1600	2018.07.12	2020.07.11	☐
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2018.07.18	2021.07.17	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Radiated Emission Test For Frequency 1 GHz-18 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2019.10.29	2020.10.28	☒
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1148	2018.07.12	2020.07.11	☒
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2018.07.18	2021.07.17	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Radiated Emission Test For Frequency Above 18 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE & SCHWARZ	FSV40	101544	2020.02.19	2021.02.18	☒
Test Antenna-Horn	A-INFOMW	LB-180400KF	J211060273	2019.01.05	2021.01.04	☒
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2018.07.18	2021.07.17	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2019.06.13	2020.06.12	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2019.07.04	2020.07.03	☒
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.4m*3.1m*2.8m	N/A	2018.08.16	2021.08.15	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

4.3 Test Enclosure list

Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	Dell	015K3N	N/A	N/A	Special Handled	☐
Laptop	Apple	A1465	N/A	N/A	N/A	☒
Printer	HP	DESKJET 1000	N/A	N/A	N/A	☐
Keyboard	Logitech	Y-BP62a	N/A	N/A	N/A	☐
Mouse	Logitech	M100	N/A	N/A	N/A	☐
USB disk	Kingston	N/A	N/A	N/A	N/A	☐
TF Card	Kingston	N/A	N/A	N/A	N/A	☒
VGA Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
HDMI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
DVI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
Coaxial video cable	N/A	N/A	N/A	2.0 m	Shielded with core	☐
iPhone	Apple	A1586	N/A	N/A	N/A	☐
Phone	MI	M4	N/A	N/A	N/A	☐
Bluetooth Earphone	SAMSUNG	Gear Circle	N/A	N/A	N/A	☒
Wireless Communication s Test Set	R&S	CMW500	142028	N/A	Cal. Due 2020.06.13	☒
WIFI Router	TP-LINK	TL-WDR7500	N/A	N/A	N/A	☒
Earphone	N/A	OPPO	N/A	1.1 m	N/A	☐
Car Battery	Camel	55530	N/A	N/A	12 V/55 Ah	☐
Artificial load	N/A	N/A	N/A	N/A	2.5 Ω /100 W	☐
Artificial load	N/A	N/A	N/A	N/A	5 Ω /100 W	☐
Electronic Load	ITECH	IT8511	N/A	N/A	N/A	☐
USB Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
DC Power Supply	ITECH	IT6863A	60001401068 7210006	N/A	N/A	☐
LCD Monitor	SAMSUNG	UA32C4000P	N/A	N/A	N/A	☐
LCD Monitor	Dell	U241HB	N/A	N/A	N/A	☐
RJ45 Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐

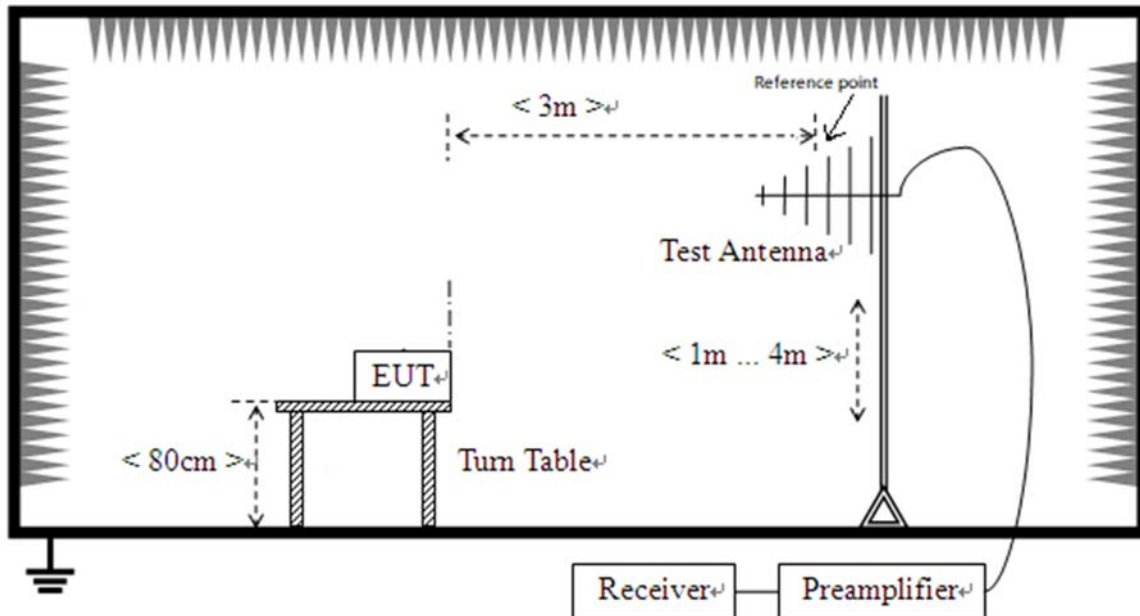
4.4 Test Configurations

Test Configurations (TC) No.	Description
Traffic Test Mode	
TC01	<u>The GSM 850 MHz Test Mode</u> GSM 850 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + GPS RX
TC02	<u>The EGPRS 850 MHz Test Mode</u> EDGE 850 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + GLONASS RX
TC03	<u>The GSM 850 MHz Test Mode with internal speaker</u> GSM 850 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + BDS RX
TC04	<u>The GSM 1900 MHz Test Mode</u> GSM 1900 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + Galileo RX
TC05	<u>The GPRS 1900 MHz Test Mode</u> GPRS 1900 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + GPS RX
TC06	<u>The WCDMA Band 2 Test Mode</u> WCDMA Band 2 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + GLONASS RX
TC07	<u>The WCDMA Band 4 Test Mode</u> WCDMA Band 4 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + BDS RX
TC08	<u>The WCDMA Band 5 Test Mode</u> WCDMA Band 5 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + Galileo RX
TC09	<u>The FDD LTE Band 2 Test Mode</u> LTE Band 2 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + GPS RX
TC10	<u>The FDD LTE Band 4 Test Mode</u> LTE Band 4 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + GLONASS RX
TC11	<u>The FDD LTE Band 5 Test Mode</u> LTE Band 5 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + BDS RX
TC12	<u>The FDD LTE Band 7 Test Mode</u> LTE Band 7 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + Galileo RX
TC13	<u>The FDD LTE Band 12 Test Mode</u> LTE Band 12 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + GPS RX
TC14	<u>The FDD LTE Band 17 Test Mode</u> LTE Band 17 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + GLONASS RX
TC15	<u>The FDD LTE Band 26 Test Mode</u> LTE Band 26 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + BDS RX
TC16	<u>The FDD LTE Band 28 Test Mode</u>

	LTE Band 28 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + Galileo RX
TC17	<u>The TDD LTE Band 38 Test Mode</u> LTE Band 38 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + GPS RX
TC18	<u>The TDD LTE Band 41 Test Mode</u> LTE Band 41 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + GLONASS RX
TC19	<u>The TDD LTE Band 42 Test Mode</u> LTE Band 42 Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (2.4G) + BDS RX
TC20	<u>The LTE CA_7C Test Mode</u> LTE CA_7C Link + Adapter + USB Cable + Battery + BT Link + WIFI Link (5G) + Galileo RX
TC21	<u>The NFC Test Mode</u> EUT + Adapter + USB Cable + Battery + NFC
TC22	<u>The Idle Test Mode</u> GSM 850(Idle) + Adapter + Battery + USB Cable + NFC RX
Amusement Test Mode	
TC23	<u>The Camera Test Mode</u> EUT + Adapter + USB Cable + Battery + TF Card
TC24	<u>The Video Play Test Mode</u> EUT + Adapter + USB Cable + Battery + TF Card
TC25	<u>The USB Test Mode</u> EUT + USB Cable + Battery + Laptop+ TF Card
TC26	<u>The Headset Test Mode</u> EUT + TYPE-C Earphone + Battery + TF Card

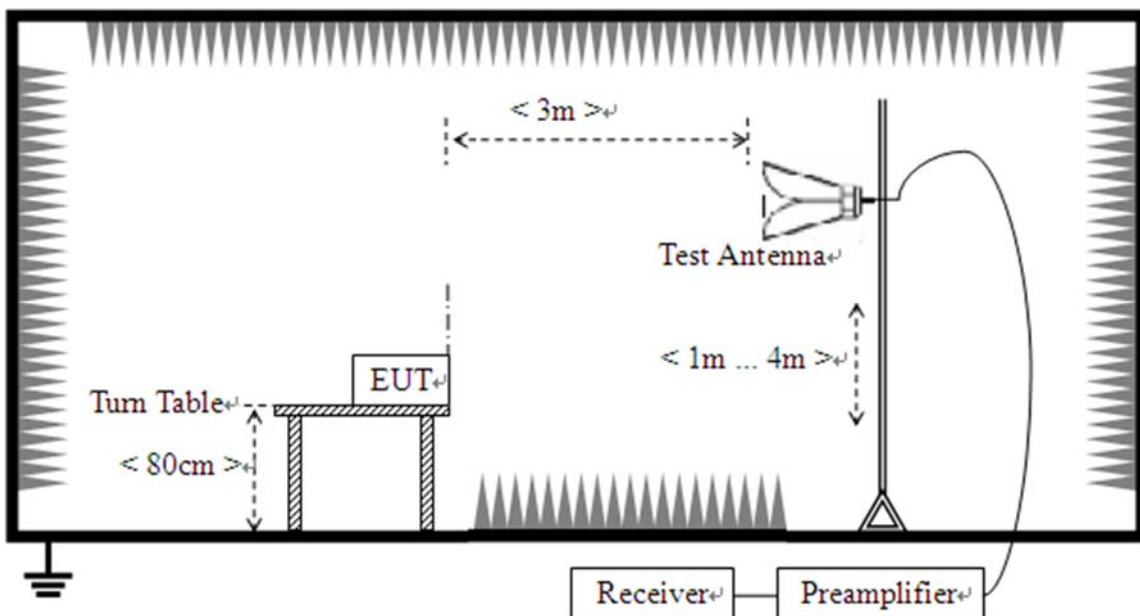
4.5 Test Setups

Test Setup 1



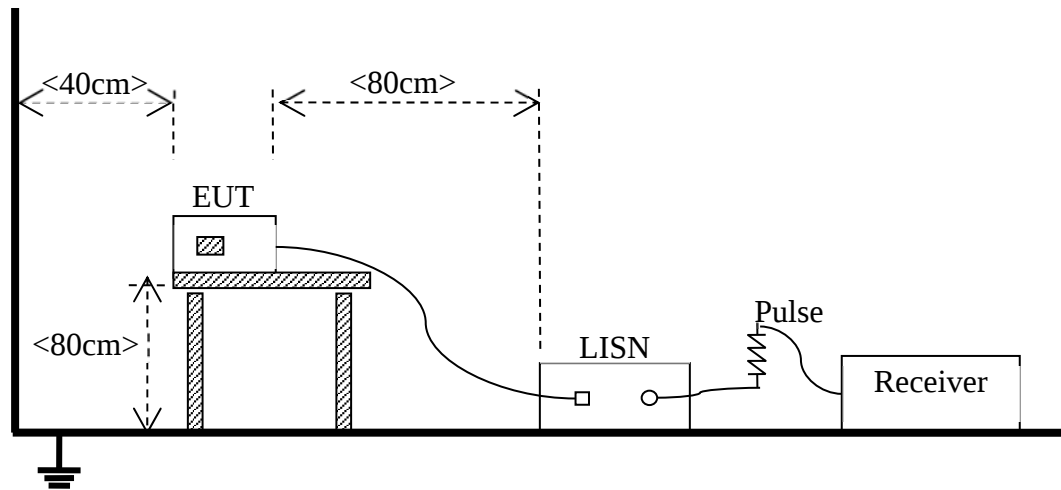
(For Radiated Emission Test (30 MHz-1 GHz))

Test Setup 2



(For Radiated Emission Test (above 1 GHz))

Test Setup 3



(For Conducted Emission, AC Ports Test)

4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1&2
	Test Configuration	TC01~TC26 ^{Note}
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC25 ^{Note}
Note: Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report. The GSM 850 MHz Test Mode is the worst mode in this report.		

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated Emission

5.1.1.1 Limit

Frequency range (MHz)	Class B (at 3 m)		Class B (at 10 m)	Class A (at 10 m)	
	Field Strength ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Field Strength ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)
30 - 88	100	40	30	90	39
88 - 216	150	43.5	33.5	150	43.5
216 - 960	200	46	36	210	46.4
Above 960	500	54	44	300	49.5

NOTE:

- 1) Field Strength (dB $\mu\text{V/m}$) = $20 \times \log [\text{Field Strength } (\mu\text{V/m})]$.
- 2) In the emission tables above, the tighter limit applies at the band edges.

5.1.1.2 Test Setup

Refer to 4.5 section (test setup 1 to test setup 2) for radiated emission test, the photo of test setup please refer to ANNEX B.

5.1.1.3 Test Procedure

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

An initial pre-scan was performed in the chamber using the EMI Receiver in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bi-Log antenna with 2 orthogonal polarities.

5.1.1.4 Test Result

Please refer to ANNEX A.1.

NOTE:

1. Results (dB $\mu\text{V/m}$) = Reading (dB μV) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain (dB)

3. Over limit = Results – Limit.

5.1.2 Conducted Emission

5.1.2.1 Test Limit

Frequency range (MHz)	Class A	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 - 0.50	79	66
0.50 - 30	73	60

Frequency range (MHz)	Class B	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- 1) The lower limit shall apply at the band edges.
- 2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.

5.1.2.2 Test Setup

Refer to 4.5 section test (test setup 3) for conducted emission, the photo of test setup please refer to ANNEX B.

5.1.2.3 Test Procedure

The EUT is connected to the power mains through a LISN which provides 50 Ω /50 μ H of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.1.2.4 Test Result

Please refer to ANNEX A.2.

NOTE:

1. Results (dB μ V/m) = Reading (dB μ V) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor = Insertion loss + Cable loss

3. Over limit = Results – Limit.

ANNEX A TEST RESULTS

A.1 Radiated Emission

Note 1: The symbol of "--" in the table which means not application.

Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: This frequency which near 850 MHz with circle should be ignored because they are MS and SS carrier frequency, the marked spikes near 2400 MHz with circle should be ignored because they are Bluetooth or WIFI carrier frequency.

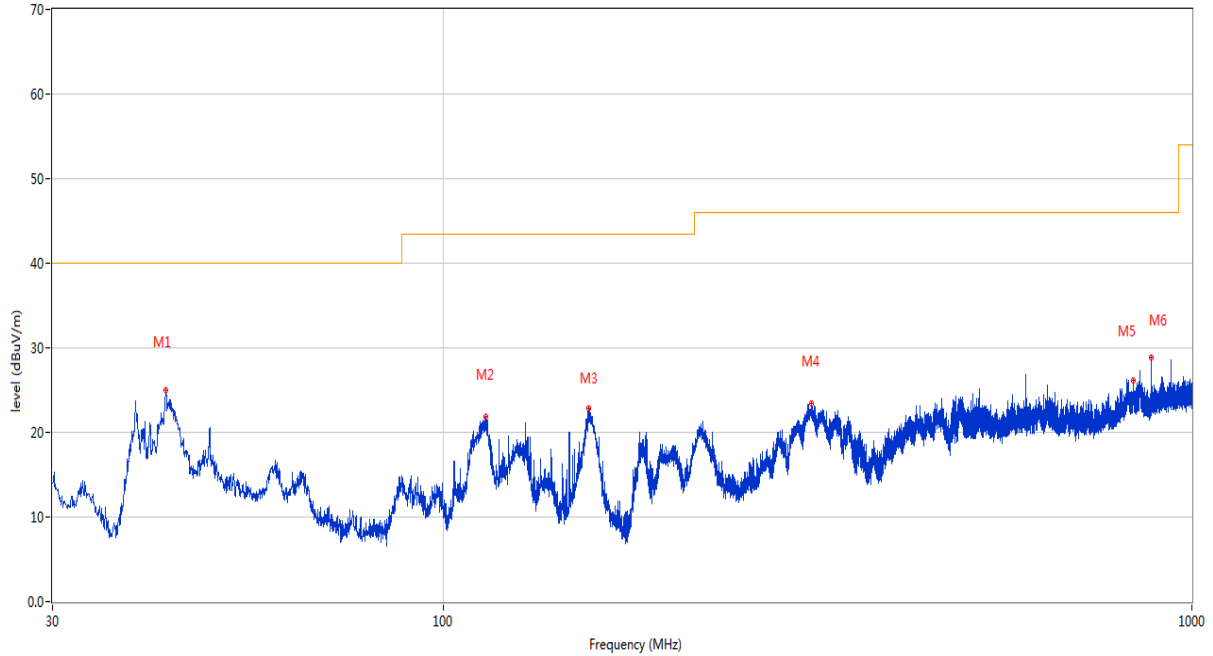
Note 4: The spurious from 18G-40G is noise only, do not show on the report.

Note 5: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Test Data and Plots

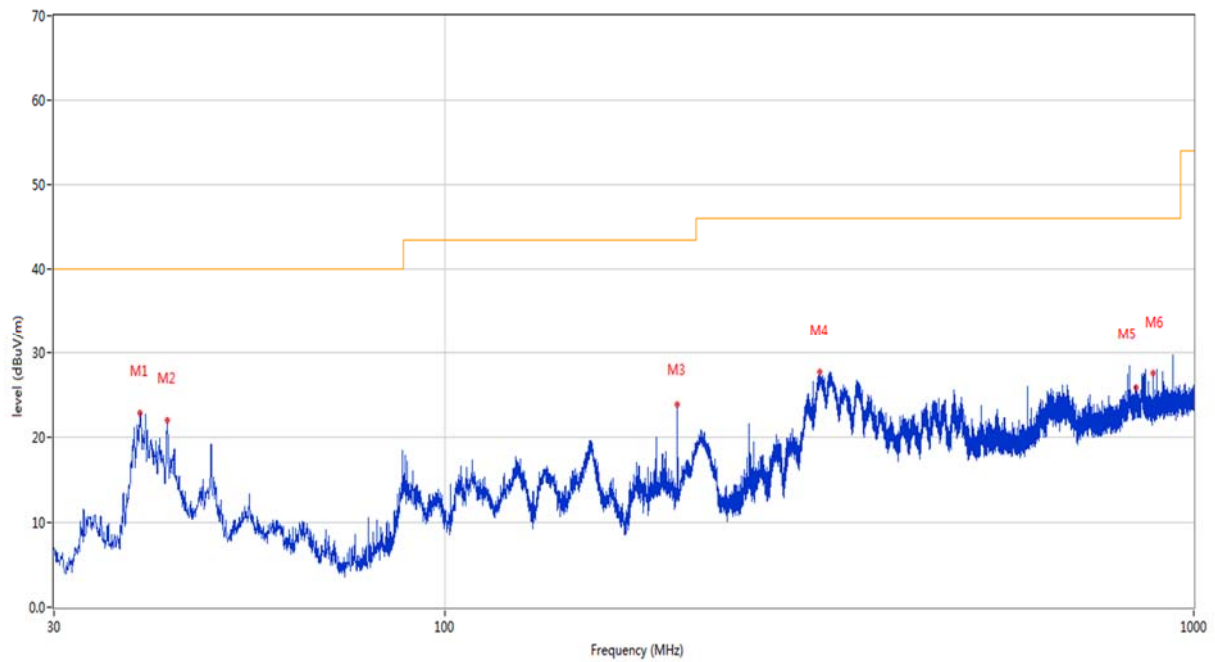
The GSM 850 MHz Test Mode

A.1.1 Test Antenna Vertical, 30 MHz – 1 GHz



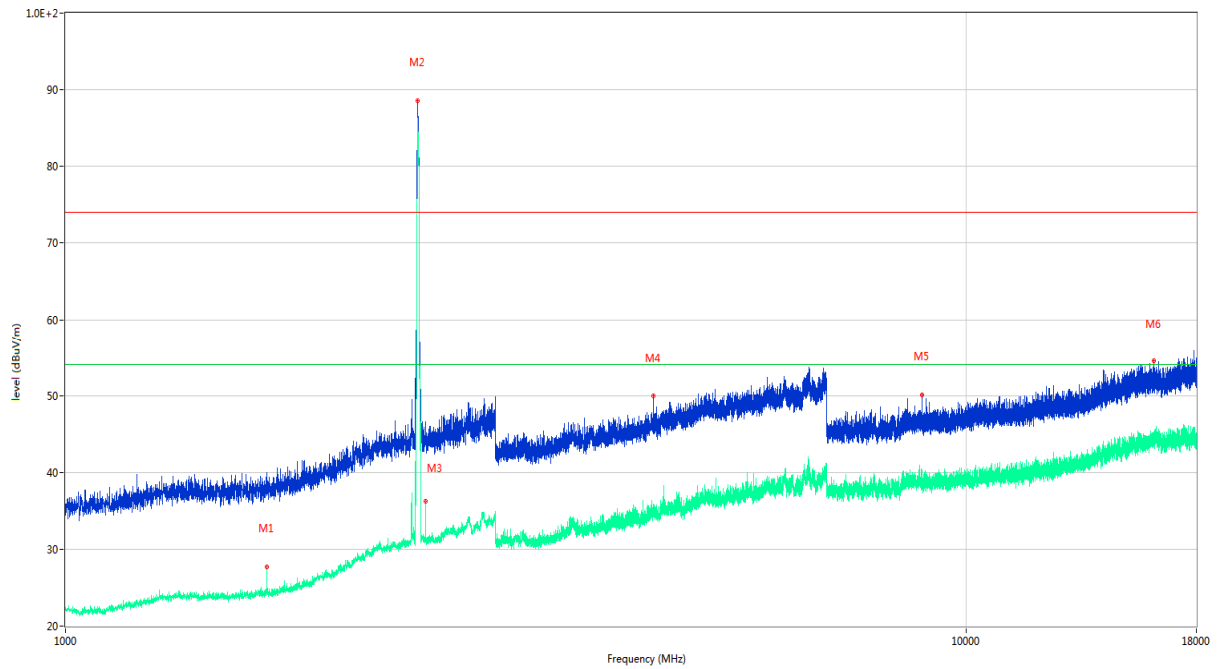
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.562	25.01	-23.24	40.0	-14.99	Peak	110.30	100	Vertical	Pass
2	113.662	21.79	-24.87	43.5	-21.71	Peak	253.60	100	Vertical	Pass
3	156.440	22.91	-27.30	43.5	-20.59	Peak	352.80	100	Vertical	Pass
4	310.378	23.46	-21.44	46.0	-22.54	Peak	235.30	100	Vertical	Pass
5	835.779	26.16	-7.96	46.0	-19.84	Peak	1.30	200	Vertical	N/A
6	881.612	28.80	-10.33	46.0	-17.20	Peak	180.10	100	Vertical	N/A

A.1.2 Test Antenna Horizontal, 30 MHz – 1 GHz



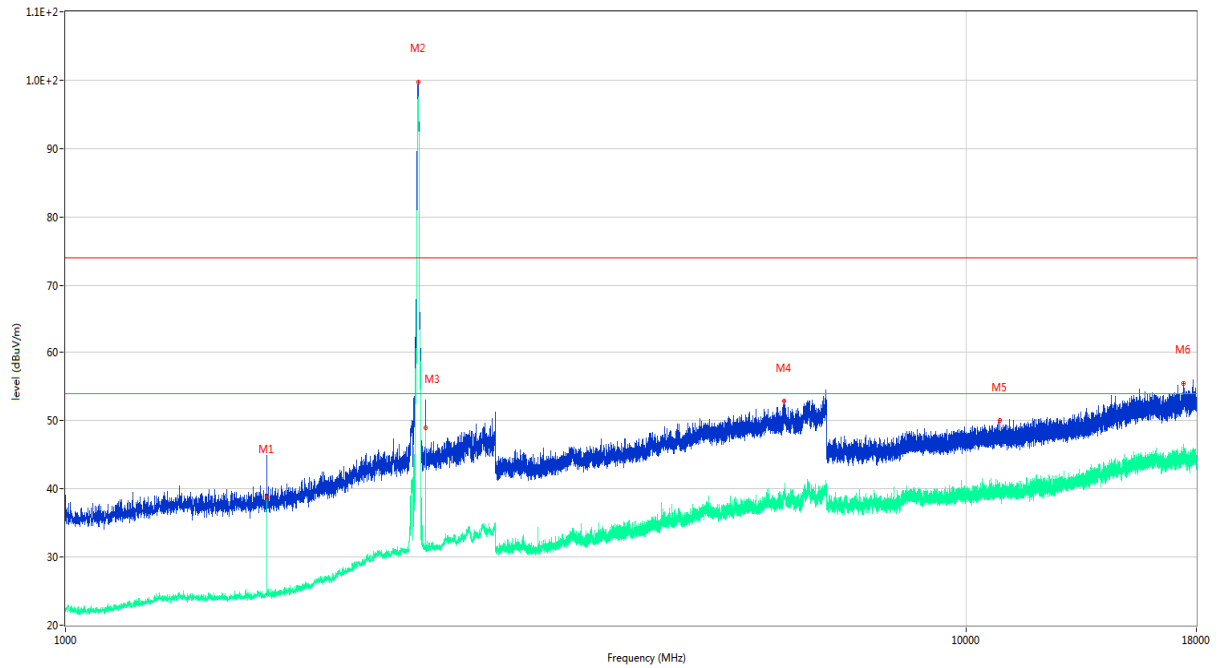
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	39.118	22.86	-24.41	40.0	-17.14	Peak	103.20	100	Horizontal	Pass
2	42.465	22.02	-23.26	40.0	-17.98	Peak	0.00	100	Horizontal	Pass
3	204.164	23.84	-23.86	43.5	-19.66	Peak	360.00	200	Horizontal	Pass
4	316.586	27.69	-21.09	46.0	-18.31	Peak	114.10	100	Horizontal	Pass
5	836.604	25.88	-8.09	46.0	-20.12	Peak	360.00	200	Horizontal	Pass
6	881.660	27.60	-10.33	46.0	-18.40	Peak	79.20	100	Horizontal	Pass

A.1.3 Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1673.500	39.85	-16.91	74.0	-34.15	Peak	360.00	100	Vertical	N/A
1**	1673.500	27.74	-16.91	54.0	-26.26	AV	360.00	100	Vertical	N/A
2	2460.000	88.58	-12.44	74.0	14.58	Peak	168.00	100	Vertical	N/A
2**	2460.000	86.23	-12.44	54.0	32.23	AV	168.00	100	Vertical	N/A
3	2510.500	43.90	-11.44	74.0	-30.10	Peak	255.00	100	Vertical	N/A
3**	2510.500	36.24	-11.44	54.0	-17.76	AV	255.00	100	Vertical	N/A
4	4494.000	49.90	-4.15	74.0	-24.10	Peak	310.00	100	Vertical	Pass
4**	4494.000	34.53	-4.15	54.0	-19.47	AV	310.00	100	Vertical	Pass
5	8924.500	50.08	0.09	74.0	-23.92	Peak	140.00	100	Vertical	Pass
5**	8924.500	38.90	0.09	54.0	-15.10	AV	140.00	100	Vertical	Pass
6	16147.500	54.49	1.95	74.0	-19.51	Peak	166.00	100	Vertical	Pass
6**	16147.500	44.47	1.95	54.0	-9.53	AV	166.00	100	Vertical	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 18 GHz

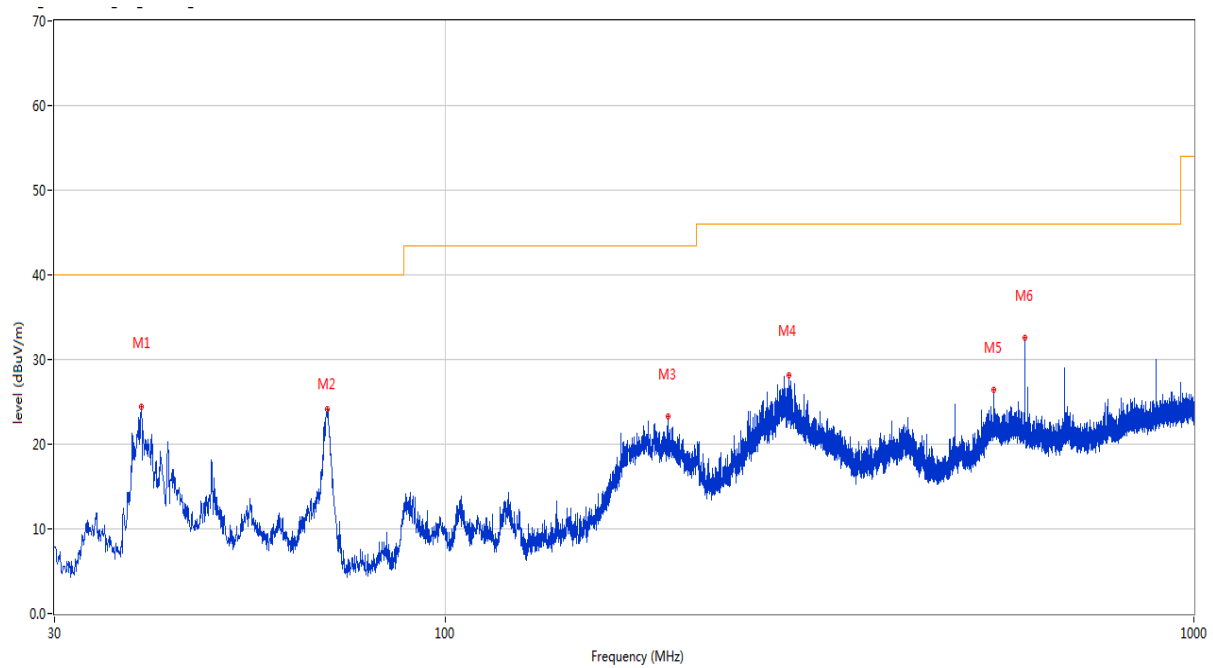


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1673.500	43.44	-16.91	74.0	-30.56	Peak	317.00	100	Horizontal	N/A
1**	1673.500	38.76	-16.91	54.0	-15.24	AV	317.00	100	Horizontal	N/A
2	2463.000	99.70	-12.21	74.0	25.70	Peak	167.00	100	Horizontal	N/A
2**	2463.000	96.70	-12.21	54.0	42.70	AV	167.00	100	Horizontal	N/A
3	2510.500	50.34	-11.44	74.0	-23.66	Peak	328.00	100	Horizontal	N/A
3**	2510.500	48.94	-11.44	54.0	-5.06	AV	328.00	100	Horizontal	N/A
4	6278.000	52.82	0.37	74.0	-21.18	Peak	294.00	100	Horizontal	Pass
4**	6278.000	38.63	0.37	54.0	-15.37	AV	294.00	100	Horizontal	Pass
5	10882.500	49.98	0.35	74.0	-24.02	Peak	325.00	100	Horizontal	Pass
5**	10882.500	40.16	0.35	54.0	-13.84	AV	325.00	100	Horizontal	Pass
6	17425.500	55.40	4.69	74.0	-18.60	Peak	174.00	100	Horizontal	Pass
6**	17425.500	44.85	4.69	54.0	-9.15	AV	174.00	100	Horizontal	Pass

Test Data and Plots

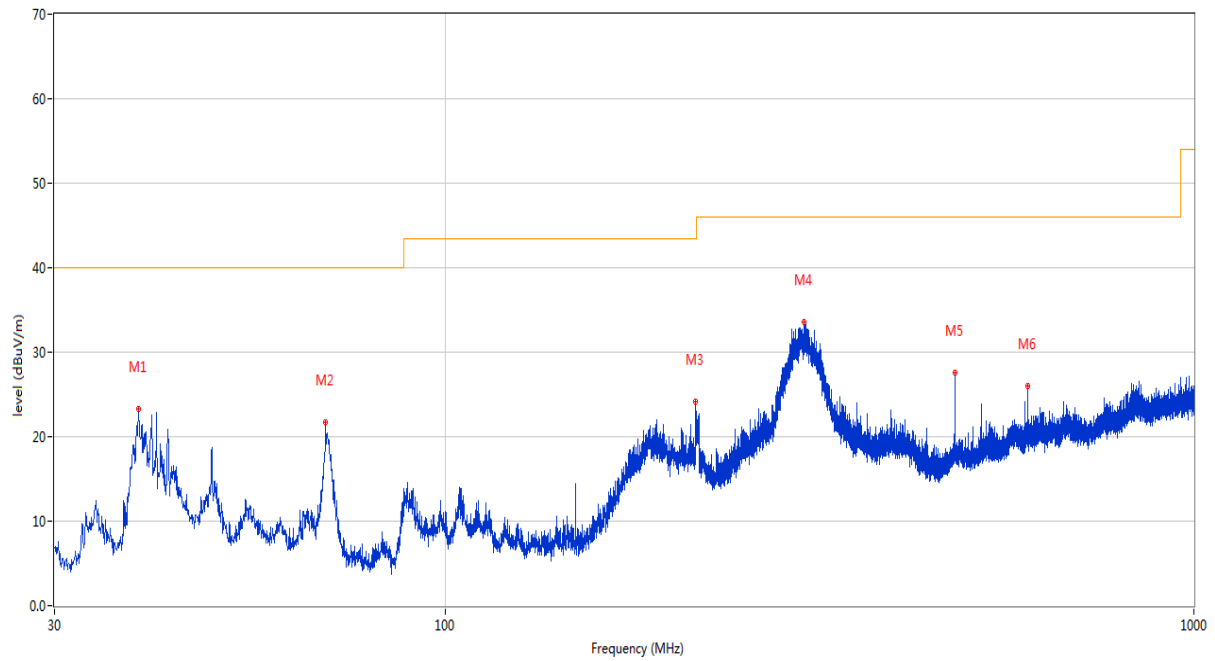
The USB Test Mode

A.1.5 Test Antenna Vertical, 30 MHz – 1 GHz



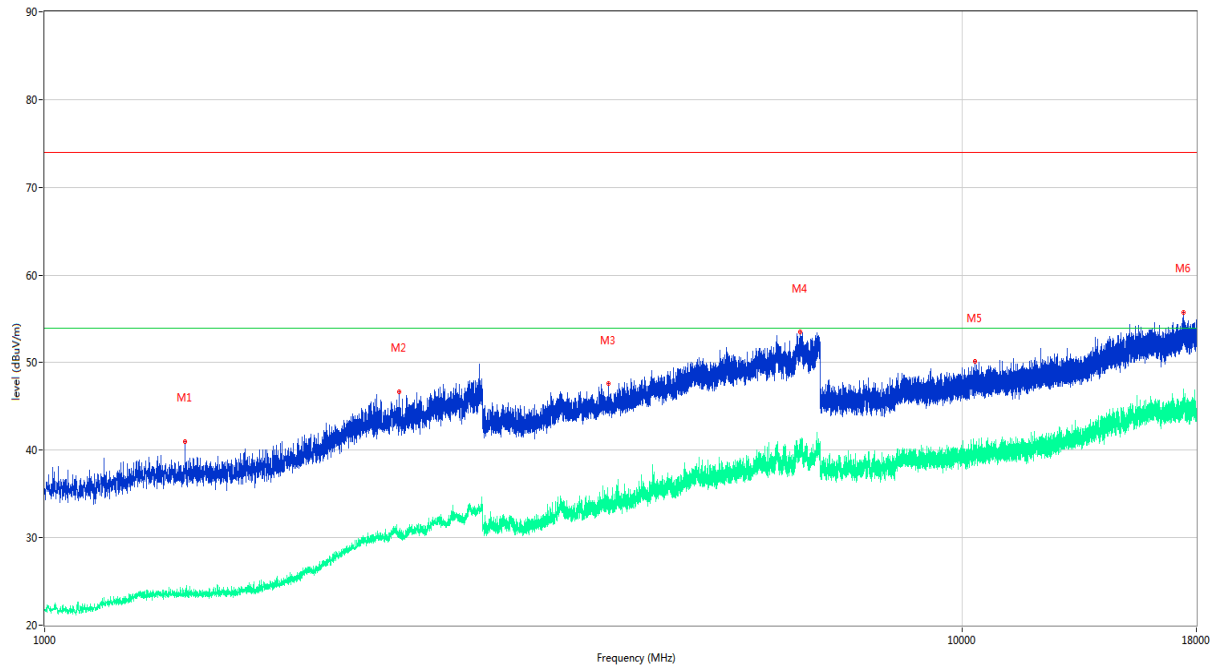
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	39.166	24.43	-24.37	40.0	-15.57	Peak	65.80	200	Vertical	Pass
2	69.479	24.19	-26.87	40.0	-15.81	Peak	83.80	100	Vertical	Pass
3	198.150	23.29	-24.18	43.5	-20.21	Peak	196.00	100	Vertical	Pass
4	287.971	28.08	-21.98	46.0	-17.92	Peak	53.00	200	Vertical	Pass
5	539.977	26.45	-15.85	46.0	-19.55	Peak	34.00	100	Vertical	Pass
6	594.006	32.55	-14.68	46.0	-13.45	Peak	198.50	100	Vertical	Pass

A.1.6 Test Antenna Horizontal, 30 MHz – 1 GHz



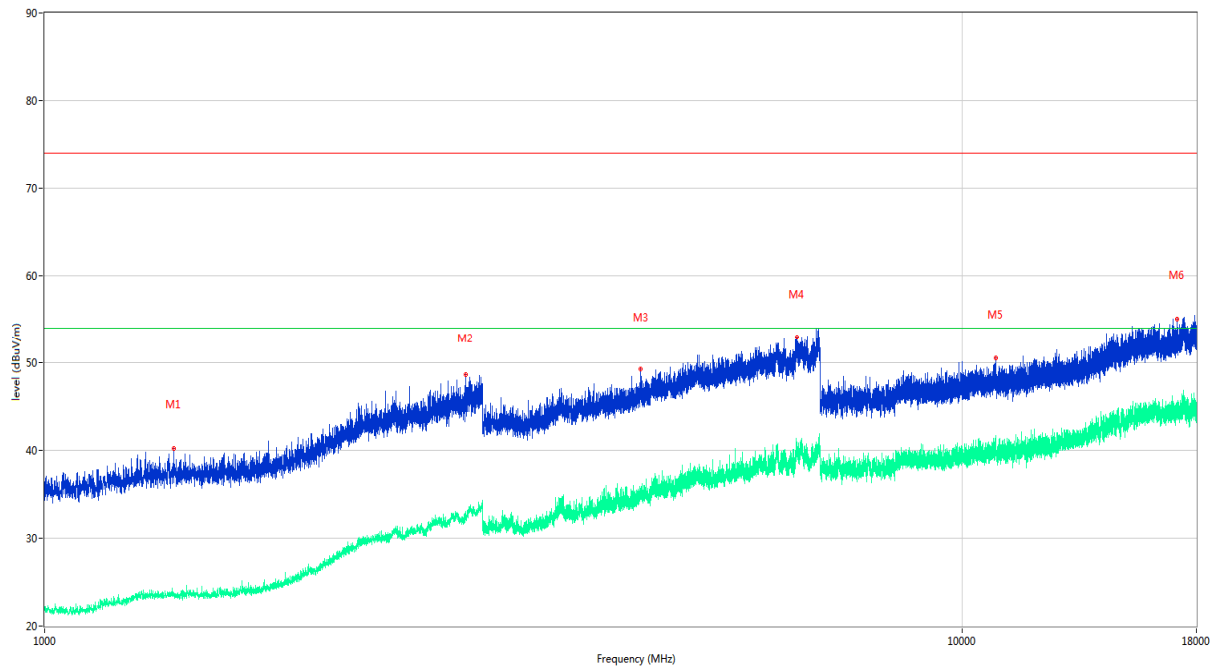
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	38.827	23.28	-24.46	40.0	-16.72	Peak	31.80	100	Horizontal	Pass
2	69.140	21.65	-26.61	40.0	-18.35	Peak	195.20	200	Horizontal	Pass
3	215.998	24.14	-23.92	43.5	-19.36	Peak	94.60	200	Horizontal	Pass
4	301.358	33.56	-21.57	46.0	-12.44	Peak	351.50	100	Horizontal	Pass
5	479.983	26.05	-17.01	46.0	-19.95	Peak	204.10	100	Horizontal	Pass
6	600.020	25.97	-14.57	46.0	-20.03	Peak	354.10	100	Horizontal	Pass

A.1.7 Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1422.000	40.99	-17.40	74.0	-33.01	Peak	181.00	100	Vertical	Pass
1**	1422.000	23.49	-17.40	54.0	-30.51	AV	181.00	100	Vertical	Pass
2	2434.000	46.65	-12.71	74.0	-27.35	Peak	40.00	100	Vertical	Pass
2**	2434.000	30.11	-12.71	54.0	-23.89	AV	40.00	100	Vertical	Pass
3	4118.000	47.55	-5.21	74.0	-26.45	Peak	195.00	100	Vertical	Pass
3**	4118.000	33.96	-5.21	54.0	-20.04	AV	195.00	100	Vertical	Pass
4	6661.500	53.57	-0.02	74.0	-20.43	Peak	352.00	100	Vertical	Pass
4**	6661.500	39.79	-0.02	54.0	-14.21	AV	352.00	100	Vertical	Pass
5	10328.500	50.13	0.48	74.0	-23.87	Peak	0.00	100	Vertical	Pass
5**	10328.500	39.41	0.48	54.0	-14.59	AV	0.00	100	Vertical	Pass
6	17433.500	55.84	4.42	74.0	-18.16	Peak	175.00	100	Vertical	Pass
6**	17433.500	45.62	4.42	54.0	-8.38	AV	175.00	100	Vertical	Pass

A.1.8 Test Antenna Horizontal, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1383.000	40.25	-17.45	74.0	-33.75	Peak	148.00	100	Horizontal	Pass
1**	1383.000	23.62	-17.45	54.0	-30.38	AV	148.00	100	Horizontal	Pass
2	2877.000	48.66	-10.12	74.0	-25.34	Peak	240.00	100	Horizontal	Pass
2**	2877.000	32.40	-10.12	54.0	-21.60	AV	240.00	100	Horizontal	Pass
3	4465.000	49.28	-3.39	74.0	-24.72	Peak	288.00	100	Horizontal	Pass
3**	4465.000	35.01	-3.39	54.0	-18.99	AV	288.00	100	Horizontal	Pass
4	6607.000	52.95	0.52	74.0	-21.05	Peak	335.00	100	Horizontal	Pass
4**	6607.000	40.14	0.52	54.0	-13.86	AV	335.00	100	Horizontal	Pass
5	10884.000	50.55	0.36	74.0	-23.45	Peak	167.00	100	Horizontal	Pass
5**	10884.000	40.18	0.36	54.0	-13.82	AV	167.00	100	Horizontal	Pass
6	17138.500	55.06	3.13	74.0	-18.94	Peak	61.00	100	Horizontal	Pass
6**	17138.500	44.53	3.13	54.0	-9.47	AV	61.00	100	Horizontal	Pass

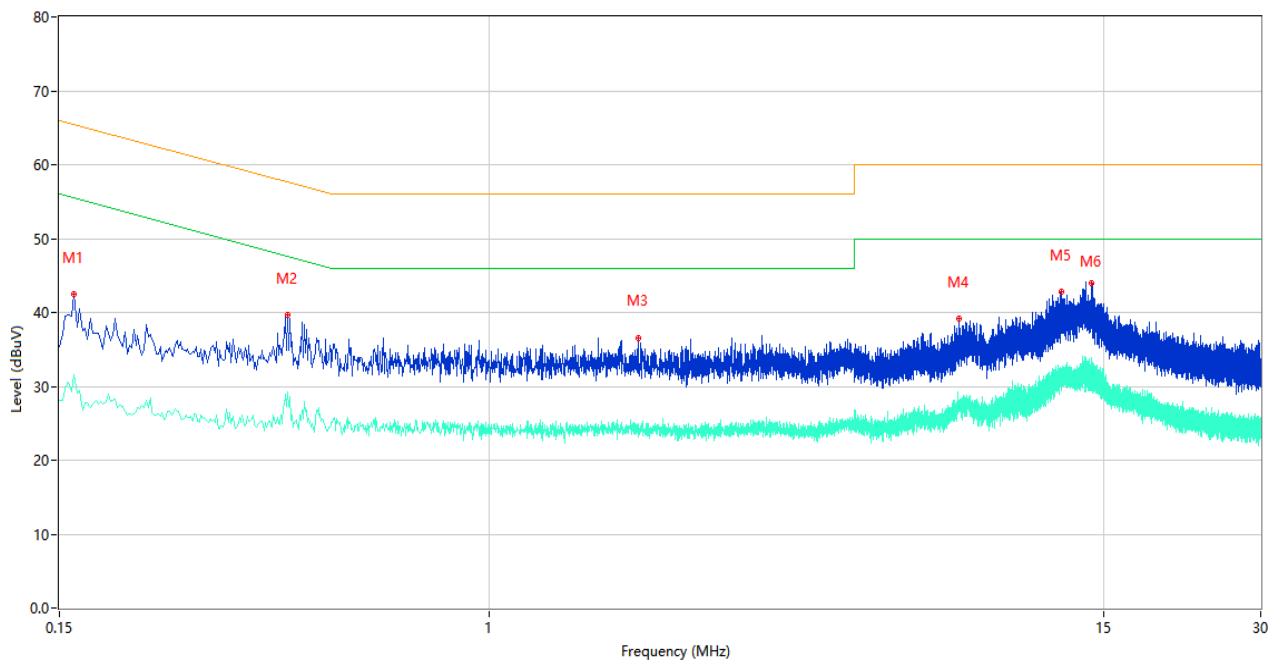
A.2 Conducted Emission

Note: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Test Data and Plots

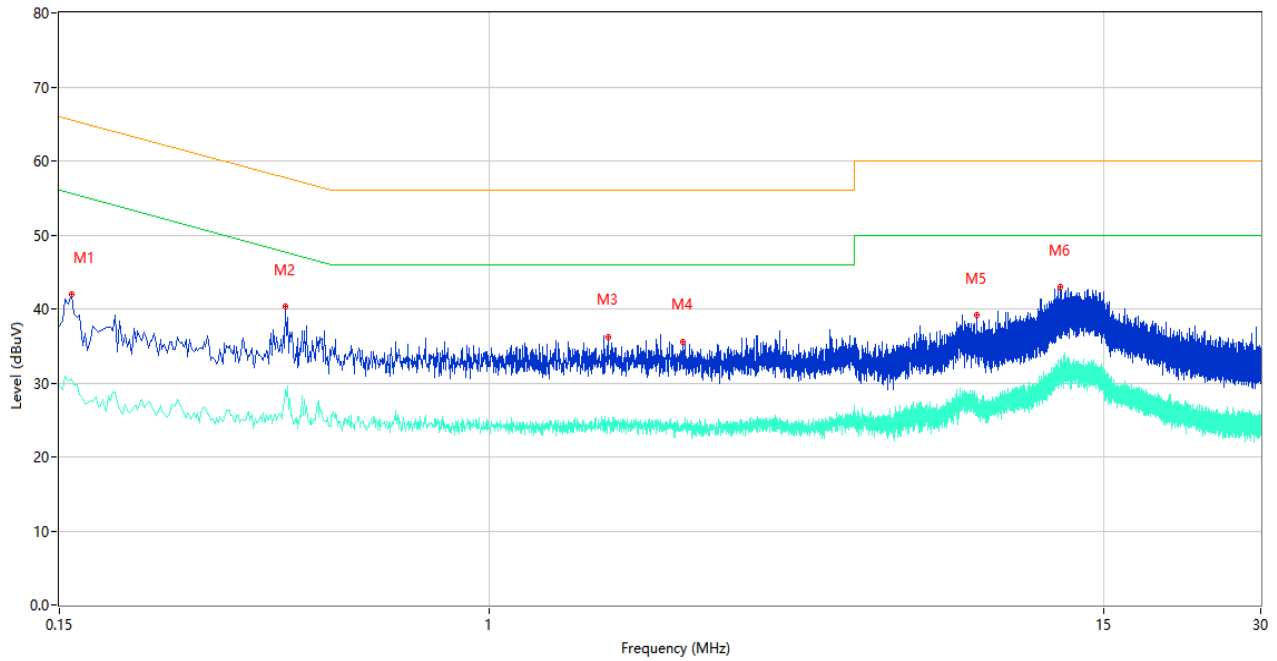
The GSM 850 MHz Test Mode

A.2.1 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.156	39.60	10.41	65.67	-26.07	Peak	L	Pass
1**	0.156	30.50	10.41	55.67	-25.17	AV	L	Pass
2	0.410	39.60	10.31	57.65	-18.05	Peak	L	Pass
2**	0.410	29.25	10.31	47.65	-18.40	AV	L	Pass
3	1.928	36.47	10.25	56.00	-19.53	Peak	L	Pass
3**	1.928	24.12	10.25	46.00	-21.88	AV	L	Pass
4	7.918	39.15	10.35	60.00	-20.85	Peak	L	Pass
4**	7.918	27.34	10.35	50.00	-22.66	AV	L	Pass
5	12.470	42.76	10.39	60.00	-17.24	Peak	L	Pass
5**	12.470	31.61	10.39	50.00	-18.39	AV	L	Pass
6	14.202	43.96	10.40	60.00	-16.04	Peak	L	Pass
6**	14.202	33.39	10.40	50.00	-16.61	AV	L	Pass

A.2.2 N Phase

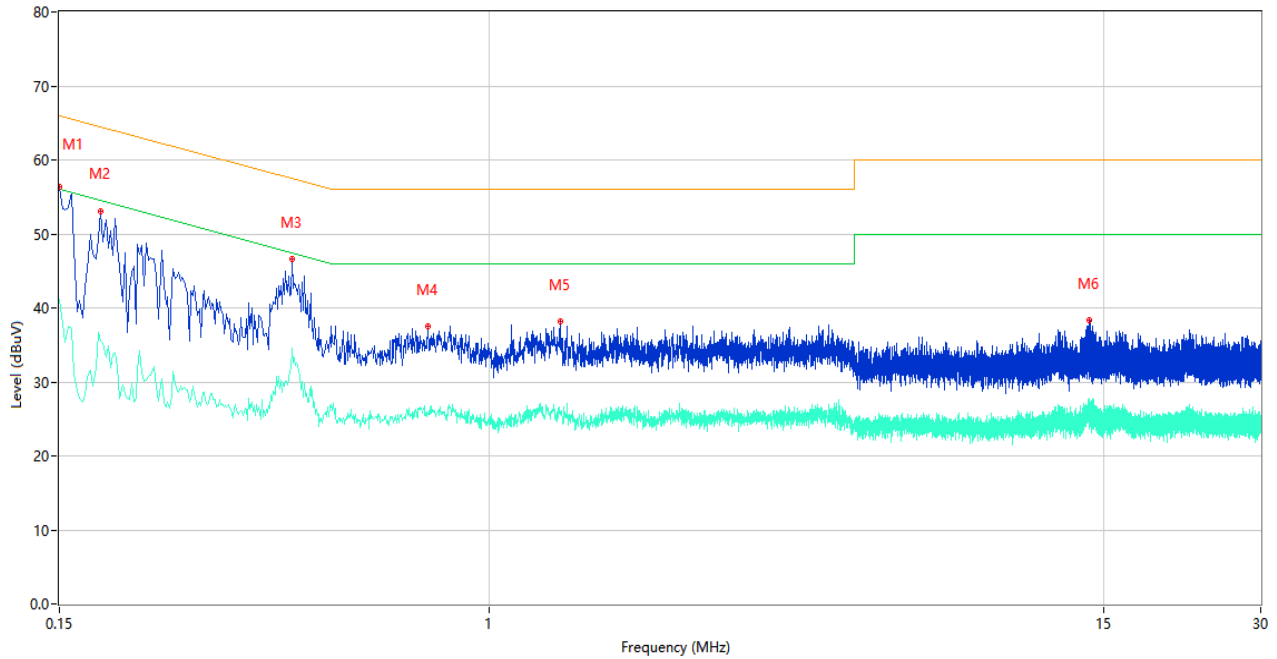


No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.158	42.00	10.40	65.57	-23.57	Peak	N	Pass
1**	0.158	30.60	10.40	55.57	-24.97	AV	N	Pass
2	0.406	40.25	10.31	57.73	-17.48	Peak	N	Pass
2**	0.406	29.11	10.31	47.73	-18.62	AV	N	Pass
3	1.690	36.26	10.26	56.00	-19.74	Peak	N	Pass
3**	1.690	25.21	10.26	46.00	-20.79	AV	N	Pass
4	2.344	35.58	10.26	56.00	-20.42	Peak	N	Pass
4**	2.344	23.88	10.26	46.00	-22.12	AV	N	Pass
5	8.562	39.23	10.35	60.00	-20.77	Peak	N	Pass
5**	8.562	25.64	10.35	50.00	-24.36	AV	N	Pass
6	12.374	42.97	10.39	60.00	-17.03	Peak	N	Pass
6**	12.374	31.69	10.39	50.00	-18.31	AV	N	Pass

Test Data and Plots

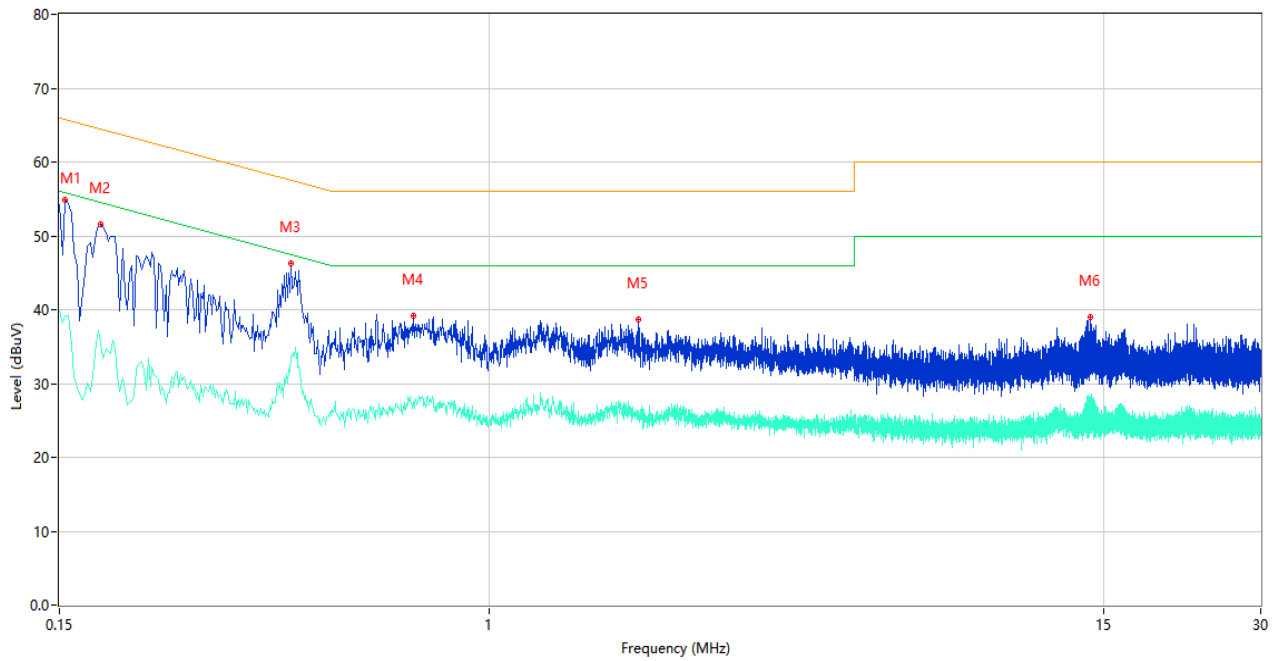
The USB Test Mode

A.2.3 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	56.29	10.41	66.00	-9.71	Peak	L	Pass
1**	0.150	41.12	10.41	56.00	-14.88	AV	L	Pass
2	0.180	53.13	10.39	64.49	-11.36	Peak	L	Pass
2**	0.180	35.47	10.39	54.49	-19.02	AV	L	Pass
3	0.418	46.69	10.31	57.49	-10.80	Peak	L	Pass
3**	0.418	34.62	10.31	47.49	-12.87	AV	L	Pass
4	0.762	37.45	10.26	56.00	-18.55	Peak	L	Pass
4**	0.762	25.62	10.26	46.00	-20.38	AV	L	Pass
5	1.364	38.23	10.25	56.00	-17.77	Peak	L	Pass
5**	1.364	25.98	10.25	46.00	-20.02	AV	L	Pass
6	14.072	38.36	10.40	60.00	-21.64	Peak	L	Pass
6**	14.072	24.46	10.40	50.00	-25.54	AV	L	Pass

A.2.4 N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.154	54.84	10.41	65.78	-10.94	Peak	N	Pass
1**	0.154	39.15	10.41	55.78	-16.63	AV	N	Pass
2	0.180	51.55	10.39	64.49	-12.94	Peak	N	Pass
2**	0.180	35.58	10.39	54.49	-18.91	AV	N	Pass
3	0.416	46.23	10.31	57.53	-11.30	Peak	N	Pass
3**	0.416	33.65	10.31	47.53	-13.88	AV	N	Pass
4	0.716	39.13	10.27	56.00	-16.87	Peak	N	Pass
4**	0.716	27.24	10.27	46.00	-18.76	AV	N	Pass
5	1.930	38.60	10.25	56.00	-17.40	Peak	N	Pass
5**	1.930	25.07	10.25	46.00	-20.93	AV	N	Pass
6	14.134	39.07	10.40	60.00	-20.93	Peak	N	Pass
6**	14.134	28.26	10.40	50.00	-21.74	AV	N	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2030337-AE-1.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2030337-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2030337-AI.PDF”.

--END OF REPORT--